

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) ~~Method~~ A method of reconstructing coherent scatter computed tomography (CSCT) data of an object of interest, the method comprising the ~~steps~~ acts of:

acquiring attenuation data of the object of interest from primary radiation transmitted through the object of interest;

performing a beam hardening compensation of scatter radiation data on ~~the basis of~~ based on the acquired attenuation data and based on an energy shift of an equivalent object equivalent to the object of interest; wherein the scatter radiation data is based on scatter radiation scattered from the object of interest; and

reconstructing the coherent scatter computed tomography data by using the compensated scatter radiation data.

2. (Currently Amended) The method of claim 1, wherein a ~~compensating of a beam hardening effect is performed on the basis of an energy shift determined on the basis of an equivalent object, wherein the energy shift occurring with of the equivalent object caused by the a beam hardening effect is known.~~

3. (Currently Amended) The method of claim 1, further comprising the ~~steps acts~~ of:

determining a mean attenuation caused by the object of interest ~~on the basis of based on~~ the attenuation data;

determining an equivalent thickness of a pre-selected ~~first material on the basis of the equivalent object based on~~ the mean attenuation;

determining an ~~the energy shift on the basis of based on~~ the equivalent thickness of the pre-selected ~~first~~ material; and

compensating the scatter radiation data by using the energy shift.

4. (Currently Amended) The method of claim 1, further comprising the ~~steps acts~~ of:

reconstructing a volume data set comprising absorption coefficients of the object of interest;

determining radiation spectra for scattered photons of the scatter radiation;

determining mean energies of the scattered photons ~~on the basis of~~ based on the radiation spectra; and

performing a reconstruction of the coherent scatter computed tomography data by using the mean energies.

5. (Currently Amended) The method of claim 1, ~~wherein, on the basis of the attenuation data, further comprising the acts of determining, based on the attenuation data, a second material is determined~~ which is located on a path of a scattered photon of the scatter radiation in the object of interest; ~~wherein an absorption spectrum of the second material is used for~~

determining a mean energy of the scattered photon using an absorption spectrum of the material; and wherein

using the mean energy ~~is used~~ for the reconstruction.

6. (Currently Amended) ~~Coherent~~ A coherent scatter computed

tomography apparatus, the apparatus comprising:

a detector assembly ~~(1, 4, 15, 30, 34)~~ with a source of radiation ~~(4)~~,

a first detector ~~(15)~~; and

a second detector ~~(30, 34)~~;

wherein the detector assembly is arranged for rotation around an object of interest ~~(7)~~;

wherein the first detector and the second ~~detectors~~ detector are arranged opposite to the source of radiation;

wherein the first detector is arranged for acquiring attenuation data of the object of interest from primary radiation transmitted through the object of interest;

wherein the second detector is arranged for acquiring scatter radiation data of the object of interest from scatter radiation scattered from the object of interest;

wherein the apparatus performs a beam hardening compensation of the scatter radiation data on the basis of based on the acquired attenuation data and based on an energy shift of an equivalent object equivalent to the object of interest; and

wherein the apparatus performs a reconstruction of coherent

scatter computed tomography data by using the compensated scatter radiation data.

7. (Currently Amended) The apparatus of claim 6, wherein the ~~compensating for the beam hardening effect~~ beam hardening compensation is performed ~~on the basis of~~ based on an energy shift determined ~~on the basis of~~ based on an equivalent object, the object having a known beam hardening effect of which is known.

8. (Currently Amended) The apparatus of claim 6, wherein, ~~on the basis of~~ based on the attenuation data, a ~~second~~ material is determined which is located on a path of a scattered photon of the scatter radiation in the object of interest; wherein an absorption spectrum of the ~~second~~ material is used for determining a mean energy of the scattered photon; and wherein the mean energy is used for the reconstruction.

9. (Currently Amended) ~~Data~~ A data processing device for reconstructing coherent scatter computed tomography data of an object of interest ~~(7)~~, wherein the device comprises:

a memory ~~(52)~~ for storing attenuation data and scatter radiation data; and

a data processor ~~(51)~~ adapted to perform the following operation acts:

acquiring attenuation data of the object of interest from primary radiation transmitted through the object of interest;

performing a beam hardening compensation of scatter radiation data ~~on the basis of~~ based on the acquired attenuation data and based on an energy shift of an equivalent object equivalent to the object of interest;

wherein the scatter radiation data is based on scatter radiation scattered from the object of interest; and

reconstructing the coherent scatter computed tomography data by using the compensated scatter radiation data.

10. (Currently Amended) ~~Computer~~ A computer readable medium embodying a computer program for reconstructing coherent scatter computed tomography data of an object of interest ~~(7)~~, wherein, when the computer program is executed on one of a data processor and a coherent scatter computed tomography apparatus, the following

~~operation is~~ acts are executed:

acquiring attenuation data of the object of interest from
primary radiation transmitted through the object of interest; ~~and~~
performing a beam hardening compensation of scatter radiation
~~data on the basis of~~ based on the acquired attenuation data and
based on an energy shift of an equivalent object equivalent to the
object of interest;

wherein the scatter radiation data is based on scatter
radiation scattered from the object of interest; and
reconstructing the coherent scatter computed tomography data
by using the compensated scatter radiation data.

11.(New) The method of claim 1, wherein the performing act
includes correcting energy of the scatter radiation by the energy
shift of the equivalent object.

12.(New) The coherent scatter computed tomography apparatus
of claim 6, wherein the beam hardening compensation includes
correcting energy of the scatter radiation by the energy shift of
the equivalent object.

13.(New) The data processing device of claim 9, wherein the performing act includes correcting energy of the scatter radiation by the energy shift of the equivalent object.

14.(New) The computer readable medium of claim 10, wherein the performing act includes correcting energy of the scatter radiation by the energy shift of the equivalent object.